

ABSTRACT

A structurally supported tire includes a ground contacting tread portion, a reinforced annular band disposed radially inward of the tread portion, and a plurality of web spokes extending transversely across and radially inward from the reinforced annular band and anchored in a wheel or hub. The reinforced annular band comprises an elastomeric shear layer, at least a first membrane adhered to the radially inward extent of the elastomeric shear layer and at least a second membrane adhered to the radially outward extent of the elastomeric shear layer. Each of the membranes has a longitudinal tensile modulus sufficiently greater than the shear modulus of the shear layer so that when under load the ground contacting portion of the tire deforms to a flat contact region through shear strain in the shear layer while maintaining constant the length of the membranes, the web spokes transmitting load forces between the annular band and the hub through tension in the web spokes not connected to the ground contacting portion of the tire.

Fig. 1